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ABSTRACT

While granting college credit by examination seems to be on the increase in popularity, few educational researchers seem to be assessing the effect of proficiency credit on student educational variables. For this purpose, the transcripts of 349 students who had graduated from the University of Illinois (Urbana-Champaign campus) during the academic year 1970-71 were examined. Among the more important findings were that students who gain proficiency credit tend to graduate with more total credit hours and more credit hours in upper division courses. Both of these results were interpreted as a positive benefit of proficiency testing. Students with proficiency credit also tended to graduate sooner and with higher grade point averages (GPA) than those with no proficiency credit. However, the relationship between proficiency credit and GPA was stronger within 100-level courses than within 200- and 300-level courses. (Author)

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STUDENT EDUCATIONAL BENEFITS FROM PROFICIENCY TESTING: AN EMPIRICAL STUDY

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For the past several years, accountability has been a "buzz" word among professional educators. Historically, accountability in education is a concept derivative from that of efficiency in industry. It is no accident that, almost simultaneously with American higher education's adoption of industry's managerial techniques (e.g., PERT and PPBS), accountability (nee efficiency) seems to have become the criterion by which an educational enterprise is judged.

To the national congress, state legislatures, and the average tax-payer, efficiency in higher education often means processing the greatest number of students in the shortest amount of time with the least possible costs--all the while holding learning no worse than constant. What are some typical responses of institutions to this perceived mandate? Larger classes, increased teaching loads, greater use of teaching assistants (the paraprofessional of higher education), video-taped lectures, computer-assisted instruction, reduction or elimination of low priority programs, and proficiency testing. It is to the use of proficiency testing that this paper is addressed.

Proficiency testing or competency testing, synonomous terms both meaning the granting of credit by examination, has been described as "the wave of the future in higher education" in an article significantly entitled "Earn Your Degree...In Three-Quarter Time."[1] Others gleefully cite statistics showing how much proficiency testing has saved certain institutions in instructional costs.[2] A purveyor of proficiency tests, the College Level Examination Program (CLEP) of the College Entrance Examination Board has bombarded the television viewer with a commercial showing young Abe Lincoln being turned away by a crusty employment counselor because he,

Abe, lacked formal academic credentials. Yet, with rare exception few have critically examined proficiency testing.[3]

For higher education, proficiency testing raises at least two accountability questions: (1) What is its net effect when evaluated in cost-efficiency terms? and (2) How does it affect a student's academic experience? In many ways, the second question is paramount. And it was to provide some tentative answers for the second question that this investigation was designed. More specifically, we examined several variables (e.g., time required for graduation and level of course work) of the academic experience of students which might relate to or be affected by proficiency testing.

To conduct this study, we analyzed transcripts from a random sample of students who had graduated from the College of Liberal Arts and Sciences of the University of Illinois, Urbana-Champaign Campus, during the 1970-71 academic year. Three types of students were excluded from our study: (1) those students who had transferred course work greater than that taken in one summer from another institution; (2) those students who had commenced their formal college work prior to graduation from high school; and (3) those students who had received degrees in areas prefaced by "The Teaching of," such as "The Teaching of Social Science."

While the students in our sample were enrolled, there were three principal ways in which a student could earn proficiency credit at the University of Illinois, Urbana-Champaign.[4] First, students who had taken certain college preparatory courses in high school could receive credit by examination on various Advanced Placement Program tests. These tests are

developed by the Educational Testing Service for the College Entrance Examination Board. Second, a student could petition to be given a proficiency examination, usually locally developed, in virtually any undergraduate course. Third, entering students were offered the opportunity to earn college credit by examination in freshman rhetoric, biology, and five foreign languages. These examinations consist of both commercial and locally developed tests.

SAMPLE

A sample was randomly drawn from the four College of Liberal Arts and Sciences graduation lists for the academic year, 1970-71 (October, 1970; February, 1971; June, 1971; and August, 1971), such that approximately one student in five was chosen. This procedure resulted in the selection of 539 students whose degree was not in "The Teaching of." However, 177 of these students had transferred course work greater than one summer from another institution. Seven students had enrolled in college before completing high school. The transcripts of six other students were either unobtainable or incomplete. Thus, the final sample consisted of 349 students.

Selected Characteristics of the Sample. Of our sample, 144 students had received some credit by examination (proficiency credit); 205 students had not.[5] The total amount of proficiency credit earned by students ranged from 2 to 36 semester hours. The mean number of proficiency credits earned by the subset of students who earned some credit was 6.88 semester hours.

Thirteen students (3%) graduated in less than four years without attending any summer sessions. An additional 36 students (10%) graduated

in less than four years but attended at least one summer session. One-hundred and fifty-eight students (48%) graduated in the normal four-year period without attending summer sessions, and 129 students (35%) graduated in four years with attending summer sessions. Fourteen students (4%) attended college more than four years, but did not attend any summer school sessions. Finally, 23 students (6%) required more than four years to graduate and did attend summer school.

The required number of credit hours for graduation at the University of Illinois is 120, excluding Physical Education activity classes. In our sample the mean number of credit hours actually listed on the transcripts was 126.09 (the range was 120 - 178).

Grade-point averages (GPA's) at the University of Illinois are computed on a five-point scale, with "A's" counting 5, "B's" counting 4, etc. The average GPA for our sample was 3.93.

METHODS AND RESULTS

The relationship between proficiency credit and other student variables was assessed in two ways. First, the actual amount of proficiency credit was correlated with the values of the other variables across all students. Second, the sample was divided into three groups as a function of hours of proficiency credit earned. Group I was comprised of 205 students who had earned no proficiency credit throughout their college career. Group II contained 128 students who had received some proficiency credit but less than fourteen hours. Finally, Group III contained sixteen students who had received fourteen or more hours. The mean number of proficiency credits was 5.25 for Group II and 19.94 for Group III. The means of the three groups on other variables were then compared using a one-way analysis of variance.

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The results of these analyses are presented in Table 1 and discussed in the following subsections. One additional bit of information will be needed by the reader for understanding these sections. At the University of Illinois (Urbana - Champaign), courses are defined to be at four levels. One-hundred level courses are largely introductory in type and are mainly for lower division students. Two-hundred level courses are more advanced (largely for sophomores and juniors). Three-hundred level courses are for upper division undergraduate and graduate students. Finally, 400 level courses are graduate level, and seldom are undergraduates permitted to enroll in them.

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High School Performance. High school percentile rank correlated positively and significantly with hours of proficiency credit. As would be expected from the design, differences among the means of the three groups were also significant for high school percentile rank. Thus, the gaining of proficiency credit was positively related to previous success in high school. The relationship between hours of proficiency credit and high school credits transferred was not significant.

Credit Hours. There were significant differences among the means as well as significant correlations for total credits, total non-proficiency credits, and non-proficiency credits at the 100 and 300 levels of course work. The pattern seems clear. While students with proficiency credit graduated with fewer non-proficiency credits, they graduated with more total credits. Compared to Group I, students in Group II gained an average of

5.25 more proficiency hours but graduated with an average of 3.37 additional total credits. Similarly, students in Group III gained an average of 19.94 more hours of proficiency credit, but graduated with an average of 9.12 more total hours than Group I.

Students who received proficiency credit took considerably less 100 level course work. Although there was no significant relationship at the 200 level, there was a significant positive relationship between the amount of proficiency credit and the number of 300 level credits. Students with proficiency credit actually tended to take more course work at the 300 level than those with no proficiency credit. It appears that much of the additional course work mentioned in the previous paragraph was taken at the 300 level.

Time for Graduation. Proficiency credit was significantly related to time between matriculation and graduation. While those students in Group I averaged nearly eight and one-half semesters, students in Group III averaged just under seven and one-half semesters. Group II was intermediate, but much closer to Group I. There were no significant differences among the groups in the extent of summer school attendance.

Grade Point Average. The relationship between proficiency credit and GPA was significant within all three levels of course work and for the cumulative GPA. For each level, Group I had the lowest GPA, Group II was intermediate, and Group III was highest. However, a stronger relationship was noted for the 100 level courses than for the other two levels. The means of the three groups were much closer together for the two higher levels. Much of this difference appears attributable to the relatively low GPA of Group I for 100 level courses. Basically, Group I started lower than Groups II and III, improved more, but did not catch up.

DISCUSSION

The purpose of this study was to look at proficiency testing in terms of students' academic experiences. The results suggest the presence of benefits of proficiency credit in several areas for students.

First, proficiency credit does seem to shorten the time from matriculation to graduation. The most important indication of this comes from Group III, which, as a group, shortened its program by almost an entire semester. While this group was relatively small (N = 16), it is probably most indicative of the immediate future in higher education, with significant numbers of students receiving large amounts of proficiency credit.

Of course a shorter time required for a degree does not necessarily imply an equal or higher quality degree. However, the finding that students who gained proficiency credits also graduate with more total hours probably indicates that students do not "use" proficiency credit only to graduate quickly or lighten course loads. While some of the additional courses may be due to graduation requirements, there is no obvious reason why proficiencied courses should not count equally toward the requirements of a degree. Thus, the conclusion has to be that students take additional courses because they want to, not because they have to.

Furthermore, students with proficiency credit took more upper division course work and much less lower division course work. This is probably the most encouraging result to come out of this study. It seems safe to assume that upper division courses are generally of higher quality, and probably often of greater conceptual difficulty than lower division courses. Furthermore, upper division courses often assume knowledge taught in lower division, introductory type classes. Thus, we take the fact that

proficiency credit apparently results in students getting into higher level courses sooner, and taking more of them, to be a very positive benefit of proficiency testing.

A very valid concern to express at this point is the quality of performance in upper division courses of those students who avoided taking some of the usual lower division courses through proficiency examinations. Are they put at a disadvantage relative to their colleagues who did take the courses? If we use grades as an index, the answer seems to be that proficiency credit at lower levels did not seem to hurt students since their GPA's were essentially the same across the three course levels. However, students without proficiency credit definitely competed more favorably at the 200 and 300 level, even though they did not reach the level of the proficiency groups.

There are at least two possible explanations for the relative increase of Group I. First, there is less variance in grades as courses get higher in level (instructors give fewer D's and E's). Consequently, the decreased differences among groups is at least partially attributable to an artifact of the differential grading patterns found at different course levels. Second, taking 100 level courses may have helped bring students up to the level of the proficiency groups, i.e., a form of remedial work. The reader can probably think of other plausible hypotheses. Further research is needed to untangle this interesting result. We do not believe, however, that the grade data of this study throw proficiency testing into question.

We shall conclude this report with a note on the cost of proficiency testing. The data reported above clearly show that determining the financial savings which a proficiency testing program can provide a

university is more complex than merely multiplying the number of proficiency credits granted by the average cost of an instructional unit. This method is bound to yield over-estimates because students who gain proficiency credit tend to take additional courses. Thus, a university does not eliminate a full instructional unit for each hour of proficiency credit. Furthermore, students who gain proficiency credit tend to take higher level courses, and higher level courses cost more, on the average, than lower level courses, since they are typically taught by higher ranking instructors, have lower enrollments, and are more likely to include expensive laboratory sections. Thus, while we feel this study indicates the proficiency testing can be justified in terms of student benefits, the justification in terms of cost-efficiency might be more tenuous. Clearly, a more sophisticated look at that question is necessary before any conclusions can be made.

FOOTNOTES

1. Sorensen, P. D., "Earn Your Degree...In Three Quarter Time," The National Observer, July 1, 1972.

2. Christ-Janer, A. F., "Credit by Examination," The Expanded Campus: Current Issues in Higher Education, ed. D. W. Vermilye (San Francisco: Jossey-Bass, 1972), pp. 160-171.

3. Stallings, William M., Aleamoni, Lawrence M., and Heil, Donald K., "The University of Illinois Placement and Proficiency System: Description and Results," Journal of Higher Education, 44 (1972), pp. 610-619.

4. The University of Illinois (Urbana-Champaign Campus) now grants proficiency credit for many CLEP examinations. However, the student population of this study predated adoption of credit by CLEP.

5. In determining these and the following values, proficiency credits for physical education activity classes were excluded. Thirty-five students received one hour, four students received two hours, and one student received three hours of proficiency credit for this type of course.

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TABLE 1

Correlations with Hours of Proficiency Credit, Means of Groups Categorized by Hours of Proficiency, and Results of a One-way Analysis of Variance

Variable	Correlation (N = 349)	Means Group I (N = 205)	Group II (N = 128)	Group III N = 16	F-Ratio
High school percentile rank	.23*	83.53	89.10	95.00	11.91*
High school credits transferred	.12	0.66	0.92	1.56	2.43
Total credits[a]	.29*	124.44	127.81	133.56	12.61*
Total credits[b]	-.31*	123.79	121.64	112.06	14.97*
100 level credits[b]	-.37*	74.29	69.77	56.37	25.47*
200 level credits[b]	-.07	25.95	24.77	25.56	0.48
300 level credits[b]	.19*	23.11	26.56	29.38	5.10*
400 level credits[b]	.06	0.47	0.54	0.75	0.26
Number of semesters to graduation	-.29*	8.03	7.94	7.19	14.53*
Number of summer school sessions	-.02	0.81	0.61	0.75	2.01
Composite[c]	-.26*	8.45	8.24	7.56	12.58*
Overall GPA	.25*	3.81	4.08	4.21	18.34*
100 level GPA	.33*	3.69	4.03	4.30	27.84*
200 level GPA	.14*	4.06	4.23	4.29	5.58*
300 level GPA	.13*	3.90	4.09	4.14	5.18*

[a]Includes high school credits transferred.

[b]Non-proficiency college credits only.

[c]Number of semesters plus one-half number of summers.

*$p < .01$.